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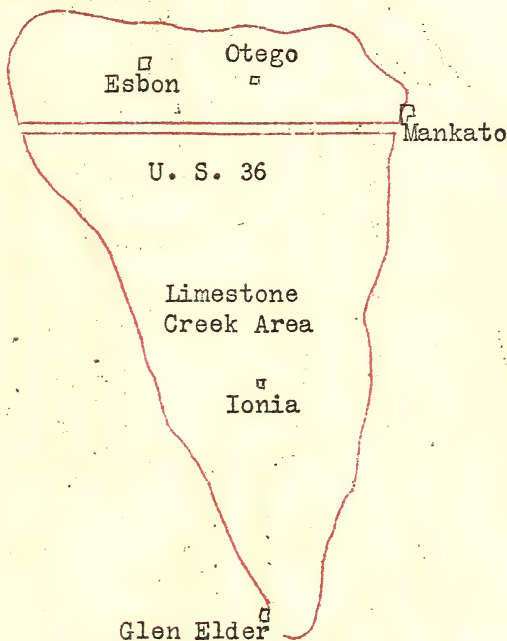
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U. S. Department of Agriculture

KANSAS KONTOURS

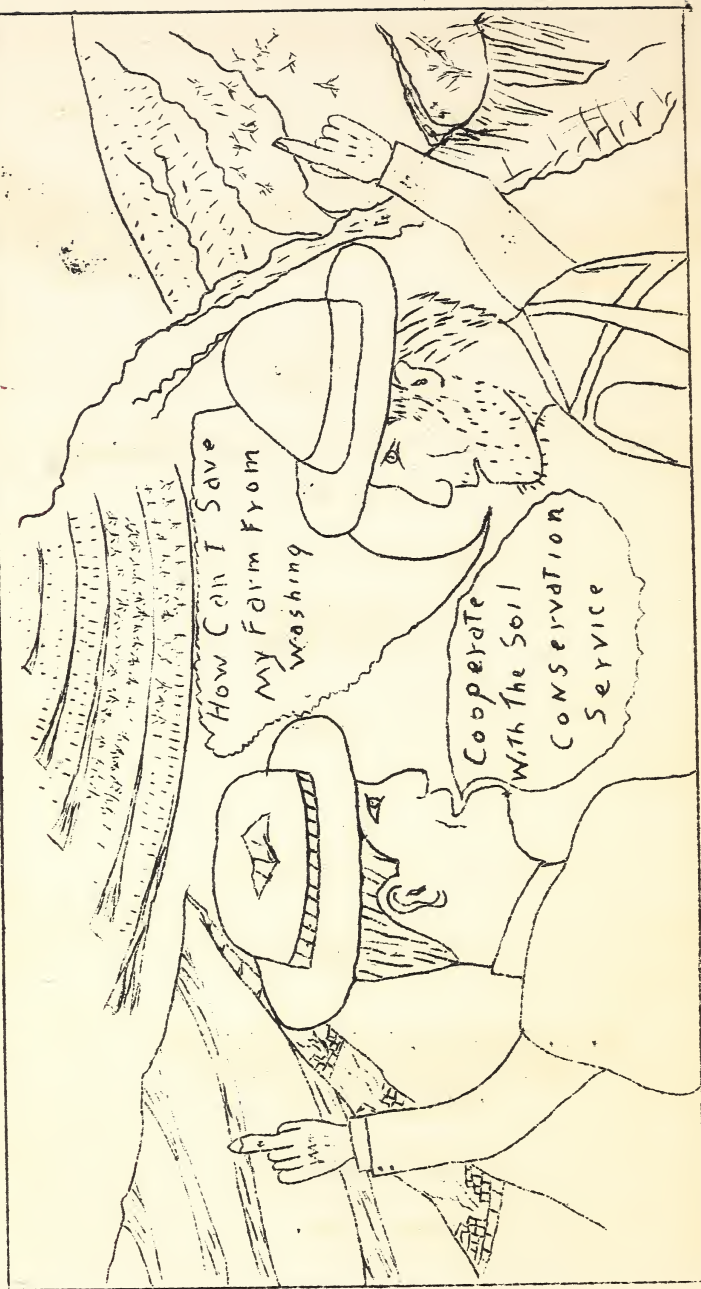


U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
PROJECT NO. 11

Mankato, Kansas.

July, 1935.

— PROTECT YOUR FARM FROM EROSION —



KANSAS KONTOURS

UNITED STATES DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE

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Mankato, Kansas.

Dr. F. L. Duley - Regional Director

Editor - E. T. Harden Contributors - SCS Staff

JULY 1935

FARMING ON THE CONTOUR

By G. M. Shook,
Lebanon, Kansas.

After twenty-seven years of ditching with listers and other farm machinery, this square farming farmer changes to contour farming. No matter how square in your dealing with your fellow men, no farmer can afford to farm his hilly land by the plan of square fields.

Contour farming is the new deal in farming, while I admit it is a radical change of plans, it is nevertheless a necessary change, and will continue to be a profitable one.

Then too, the plan of blank listing fits well with the contour farming method. Last spring, I blank listed 175 acres, 100 acres of which were on my own farm and were terraced. The remaining 75 acres were on rented land (whose owner would not terrace), and were listed, but not on the contour. The recent rains have given me an excellent opportunity to note the comparison of the two fields. The contoured land has

lost only a small amount of soil, is wetter and in much better condition to mature a crop, while the untterraced land is badly eroded, and much of the soil and water has left the field entirely.

I am farming the terraced land entirely on the contour. There are not many farm machines that can be pulled across the terraces without damage to them. Then too, when the contour is followed, your terraces will not wash and more of the water will remain on the field where it falls, which is very important.

Of course, one has more short rows, but just consider the water holding capacity of these, the convenience of farming on the level, less fuel consumption with tractors, less energy of the teams, less wear on farm tools, and I believe one's mental attitude is improved, over what it might be, were he crossing ditches, breaking machinery and preparing the land to wash away when the heavy rains fall.

The Limestone Drainage Project is a God send to the farmers in this territory. Personally, I believe all farming should be done on the contour. (Note: Mr. Shook is an SCS Cooperator in Esbon Township) - Editor.

PREPARE SUMMER FALLOW NOW

The Soil Conservation Service realizes that our Cooperators are crowded for time in which to do their farming operations. A large number of our farm plans call for alfalfa and grass to be planted on summer fallowed land this fall.

In order to conserve the top soil moisture and have the seedbed in good condition for planting by August 10, these fields need to be tilled immediately. If there are big weeds, such as sunflowers and Russian thistles, you may need to use a plow the first time. One Rus-

sian thistle or large pigweed at ten-foot intervals in a fallow field will go a long way toward defeating the purpose of the fallow. If your fields are not very weedy, the best tool to use is the duck-foot cultivator or the spring tooth cultivator. For the location of the duck-foot cultivator shovels owned by this Service, your attention is called to the May issue of Kansas Kontours.

A good job of summer fallow for alfalfa and grasses is one in which the weed growth has been prevented and by seeding time the seedbed is in good tilth and firm enough to hold up farm tools to the extent that no deep tracks are left.

If you expect to obtain seed through the Soil Conservation Service, you must work your alfalfa ground at once and keep it free of weeds until seeding time. If you do this and have the seedbed well compacted, you will have the best chance in years to obtain a good stand of alfalfa.

PASTURE CONTOURS

Nine miles of pasture contours have been built on the farms of Ira White, M. A. McCleery, G. L. Vandeventer, and Gertrude Siemon. These nine miles of contour furrows occupy about forty-five acres.

The extended period of wet weather prevented the contour furrowing of several other pastures as planned. Although the rains this spring have given ideal conditions to re-establish the sod that has been moved and its growth appears not to have been retarded.

We expect to continue building experimental pasture contour furrows on small areas throughout the summer and fall to gain information as to the best time of year when this work may be done successfully.

Since the last issue of Kansas Kontours,

another unit has been added to the pasture contour furrowing machine. This unit is a grass stripper which removes the grass to a depth of one-half to three-fourths inches from the area where the strip of sod is placed. This method puts the sod strip directly on the soil rather than on top of the grass. The grass stripper is placed far enough from the sod cutting blade so that a three-inch strip of grass remains between the open furrow and the stripped area.

SOIL MOISTURE TESTS IN CONTOUR FURROWED PASTURES

Considerable more moisture has been absorbed by the soil in the pastures that have been contour furrowed than in those left unfurrowed. Tests made after the rains of May and early June show in every case that the water has penetrated the soil at least two feet deeper immediately below the furrows and that this beneficial result has extended for several feet on either side of the furrow.

Soil moisture determinations made May 24 in the Ira White pasture one mile south of the Mount Hope Cemetery showed that the water had penetrated into the fourth foot immediately below the furrow while three feet on either side of the furrow and for the remaining distance between the furrows, it had only penetrated two feet below the surface. Approximately 5.8 inches of rain had fallen in this area within the three weeks preceding this test.

On June 10, determinations made in the same location showed that the water had penetrated into the sixth foot immediately below the furrow. During the period from the first test to the latter test, approximately six inches additional rain had fallen.

PRECIPITATION 1935
AVERAGE FOR ENTIRE AREA

<u>MONTH</u>	<u>PRECIPI-</u> <u>TATION 1935</u>	<u>NORMAL</u>	<u>BELOW</u> <u>NORMAL</u>	<u>ABOVE</u> <u>NORMAL</u>
January	0	.48	.48	
February	.64	.96	.32	
March	.36	1.17	.81	
April	.77	2.44	1.67	
May	9.36	3.52		5.84
June	6.20	3.75		2.45

Total inches to July 1 - 17.33

Total inches above normal - 5.01

EROSION RECONNAISSANCE
SURVEY OF KANSAS

Without doubt, agriculture is moving westward in the United States. Following this movement we find abandoned farms, cut over forests, scarcity of wild life, etc. This article deals solely with the abandoned farms and the reason for abandonment.

The basic and fundamental foundation of any farm is the soil. If the soil is fertile and deep, then farming is a prosperous enterprise. The soil may be likened to an automobile. When new, they are both good and something to be proud of, but when old, the car loses this and that, burns out bearings, strips gears, and is finally discarded in the city junkyard and a new one bought. On the other hand, the soil on a farm that has been newly broken out raises excellent crops, 60 bushel corn, 50 bushel oats, 30 bushel wheat, etc., for a few years. As time goes on, sheet erosion occurs, gullies appear, and are farmed around, and this field and that one won't raise corn and finally not even a

good stand of grass can be had. The farm is then discarded and the farmer looks for a new one. Forty or fifty years ago new farms could be found, but today no frontiers exist so that new farms are not to be had.

Farms that have been discarded because of unproductiveness are expensive to bring back to a profitable farming condition. Our present concern is not to bring back the abandoned farms, but to preserve and prevent other farms from reaching that same state of degradation.

Erosion (water and wind) is largely responsible for abandoned farms. Of course, erosion is accelerated by improper farming practices, cropping practices, methods of tillage, etc.

Kansas is a comparatively new state from the soils standpoint. Much of the state has been farmed only 50 to 60 years, whereas, many of the eastern states have been farmed for two hundred years, and today much of their land is in a state of abandonment.

During 1934 a reconnaissance erosion survey was made of Kansas which showed the following conditions existed:

SUMMARY

<u>EROSION CONDITION</u>	<u>ACRES</u>	<u>PERCENT</u>
Total area of state	52,520,949	100.0
Area with little or no sheet erosion.	8,848,351	16.8
One-fourth to three-fourths of top soil gone.	24,288,812	46.3
Over three-fourths of top soil gone.	7,627,967	14.5
Total area affected by wind erosion, moderate to severe.	14,634,590	27.9
Total area affected by gully-ing, occasional to severe.	29,472,836	56.1

The percentage column does not total 100 percent because of an overlapping of the different classes of erosion. This survey shows about 30 million acres in Kansas need our immediate attention.

While we have a small percentage of abandoned land in Kansas at the present time, this will not be the case in the future unless we take more precautions to prevent the loss of top soil.

The soil is one of our most valuable national resources and must be preserved. The wealth of our nation depends on the soil and its productivity.

PREPARATION OF WHEAT LAND ON THE CONTOUR

Early preparation of the seedbed is very essential in the storing of moisture so important to the sprouting and growth of the young wheat plants this fall.

There are, of course, a number of methods of preparing the seedbed such as plowing, listing, one-waying, and disking. Regardless of which of these methods you choose, the most important point is the manner in which you do the job, up and down the slope or on the level.

We know of no better method to maintain our terraces and at the same time conserve our soil and moisture, than to prepare our seedbed on the contour. In cases where the terrace ridge has insufficient height, lap the first two furrows on top of the ridge. Where the ridge is narrow, throw the first furrow against the shoulder. By leaving dead furrows in the water channel its capacity is, of course, increased.

Blank listing is desirable when on the contour as these lister furrows retain large quantities of water. The furrows may be worked down as weed growth and volunteer wheat demand;

then by seeding time a good firm seedbed is established.

The one-way plow also has its advantage largely on account of speeding up tillage operations. By making the first round, around the levee and reversing the second round a dead furrow will again be left in the water channel, thus increasing the cross section of both ridge and channel.

If even the disk harrow is used on the contour, the lines or depressions it leaves will retard the run-off down the slope. Disking across the terraces has caused breaks in several instances during the recent rains.

When it comes to seeding time these drill marks will remain on the ground all winter. This is especially true in the case of deep furrow drilling and after the wheat comes up the rows, if on the contour, will aid materially in controlling run-off.

We are convinced that contour farming, even in the handling of wheat, is very essential and that this practice will increase the yield, conserve the moisture, and save the soil.

CONTROLLING IMPOUNDED WATER ON TERRACE LINES

In nearly every newly terraced field there will be low spots in the terrace channels where the water will stand after heavy rains. Unless the rains have extended over a considerable period of time this impounded water will be beneficial as it will soon soak away and add to the subsoil moisture. In general these places will be filled with silt in from one to three years without any attention on the part of the farmer. Yet, there are a few places in many of the fields where these low spots are quite pronounced and should be corrected.

In some cases the water will stand near the

outlet and this can be easily corrected by a little work with the shovel in lowering the terrace outlet into the outlet channel. The larger ponds of water will be found where heavy fills have been made in crossing gullies. These places will eventually silt full, but it would be advisable to note the worst places and as soon as possible use a fresno to fill them with soil.

In making these fills, steep slopes both above and below the fills should be eliminated. This procedure will make the terrace more farmable as well as eliminate standing water.

Fields that are to be planted to alfalfa this fall should be carefully inspected so that the necessary repairs can be made before the alfalfa is planted. All Cooperators should keep in mind that when a field is once planted to alfalfa that it will be several years before any repairs to the terrace system can be made without destroying the alfalfa. Therefore, every Cooperator should make a careful inspection of his terrace system and correct minor defects before seeding a field to alfalfa. This is especially true of low spots where gullies have been crossed by terraces because if they later silt full the alfalfa will be covered up, or if the water stands too long in these places the alfalfa will die.

If you have any questions in regard to how to prepare your terraced fields for alfalfa, call the Soil Conservation Service.

TERRACE MAINTENANCE

Terrace maintenance can be divided into two classes: (1) Hand Work. (2) Machine Work.

Hand work consists of filling low spots or breaks in the terrace ridge, cleaning out silt deposits in the water channel and cleaning out the discharge ends of terraces.

Minor repairs can be made with a shovel.

Such work will usually be done where a terrace line crosses a field gully. The original fills settle leaving a sag in the top of the terrace ridge.

Soil deposits in the terrace channel should not be disturbed unless they are above the general level of the water channel. In such a case the dirt should be placed on the top of the ridge or cast over to the down slope side of the terrace levee.

If considerable yardage of dirt is to be moved, it will be economical to abandon the hand method in favor of teams and slips or fresnos. Where this method is adopted, it is advisable to thoroughly stir the ground before making the fills. This applies especially where a terrace has broken completely and the fill washed down to hard subsoil. The plowed ground will bond with the newly placed dirt and prevent seepage and slippage under heavy rainfall conditions. A frequent cause of breaks in terrace ridges is lack of height and breadth of levee. When a dirt fill becomes thoroughly saturated, it becomes unstable and will slough off and perhaps slide away, leaving a gap in the terrace levee. A newly built fill in a terrace line should be about 10 inches higher than the original fill to allow for settlement. A number of our Co-operators are reinforcing the fills in curves at draws by placing dirt on the down slope of the levee. This is a very good practice.

The discharge ends of terraces on sod have a tendency to produce heavy vegetation which collects trash and silt, thus clogging the outlet end. This condition calls for weed cutting and cutting of a broad level channel out through the discharge end of the terrace.

At the upper end (or dead end) of terrace lines it may be noticed that some water is backing out. This should be stopped at once by placing a small block fill across and turning

the furrow up the slope about 10 feet on a 30-foot furrow.

Another method of raising terrace levees or broadening them is by plowing and back furrowing to the terrace ridge. If the terrace is too low, start plowing a little over the top of the levee and throw the first furrow up on top. Plow around and around the terrace until the dead furrow is in the lowest point on the water channel. Any sort of plow can be used, from a single bottom walking plow with a team to a four-bottom tractor plow. If care is taken, the results will be uniformly good. Disk plows are not very satisfactory.

If a large blade grader or elevating grader is to be used in raising terrace levees, it would be advisable to consult with some one of experience before attempting the job.

CCC ACTIVITIES

The CCC Camp men are the "men of all work" on the Soil Conservation Area. During the time the three Camps have been assigned to the Area, details of Camp men have been assigned to a great variety of jobs. On April 1, 1934 the Burr Oak Camp, then located north of Esbon, was transferred to the Soil Erosion Service. On July 16, 1934 the barracks at the Lebanon Camp were filled with CCC men who had been transferred from Hays, Kansas. The personnel of both the Burr Oak and the Lebanon Camps is composed of World War Veterans. The Junior Camp at Ionia pitched their tents August 23, 1934. The membership of this Camp consists of boys between the ages of eighteen and twenty-five. The permanent quarters were completed late in September and these men began working in the Area October 1.

Although the terracing work in the Area is being done with the most efficient machinery that

it is possible to obtain, there is a large amount of hand work necessary. It is that work that has kept the six hundred or more men busy during the time they have been in Camp. Construction of terrace outlets and gully control structures have occupied most of their time.

The following summary will show the extent of their work up to July 1, 1925: 187,311 feet of outlet channel completed; 2,589 wire checks installed; 15,066 square yards of sod transplanted; 177,859 square yards gully banks sloped; 4,186 brush and rock dams completed. In addition, a large amount of earth has been moved by shovel of which we have no close record. In addition to the major pieces of work mentioned, the Camps have performed a long list of minor jobs.

During the recent floods in the Republican Valley, details from the Burr Oak and Lebanon Camps gave welcome aid to the highwater sufferers. Many farm families whose homes were inundated had their courage bolstered when a truckload of Camp men drove in and began to shovel mud out of the house or uncover some machinery.

Whether it is operating a tractor or shoveling river mud, first call is to the Camp men.

SOIL CONSERVATION STAFF

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Lebanon

Ionia

D.F. Kyle, Supt.
C.W. Naylor, Engr.
L.B. Earle, Engr.
M.E. Matter, Engr.

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1. *Journal of the American Medical Association*, 1990; 263: 1025-1028.

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1. *Chlorophyll a* and *Chlorophyll b* contents were determined by the method of Arar and Johnson (1977).